

What is claimed is:

1. An inspection apparatus, comprising:
  - an illumination optical system which illuminates light to an object under inspection;
  - a detection optical system which detects light reflected from said object and converts the detected light into an image signal;
  - a spatial filter which is provided in said detection optical system to selectively shield diffracted light pattern coming from a circuit pattern existing on the object by combining light-shielding points of minute dots state;
  - an arithmetic processing system which processes the image signal detected by said detection optical system; and
  - a monitor which observes foreign matters/defects based on a signal processed by said arithmetic processing system.
2. The inspection apparatus according to claim 1, further comprising a stage which mounts said object under inspection and moves said object in a three-dimensional direction.
3. The inspection apparatus according to claim 1, wherein said spatial filter is provided by printing a

Fourier transformed image of the circuit pattern as the diffracted light pattern to selectively shield.

4. The inspection apparatus according to claim 1, further comprising:

a cartridge equipped with a plurality of substrates for forming said spatial filter;

a cleaner which cleans said substrates of said cartridge; and

a printer which prints the Fourier transformed image of the circuit pattern under inspection of the object onto the substrates of said cartridge.

5. The inspection apparatus according to claim 3, wherein said detection optical system comprises a Fourier transform lens which Fourier transforms the diffracted light reflected from the circuit pattern of said object, and an inverse Fourier transform lens which inverse Fourier transforms light obtained through said spatial filter.

6. The inspection apparatus according to claim 4, wherein said detection optical system comprises a Fourier transform lens which Fourier transforms the diffracted light reflected from the circuit pattern of said object, and an inverse Fourier transform lens which inverse Fourier transforms light obtained through said spatial filter.

7. An inspection apparatus, comprising:

a stage which mounts an object under inspection and moves said object in a three-dimensional direction;

an illumination optical system which illuminates light to said object;

a detection optical system which detects light reflected from said object and converts the detected light into an image signal;

a spatial filter which is provided in said detection optical system and prints so as to shield a Fourier transformed image generated from a circuit pattern existing on the object;

an arithmetic processing system which processes the image signal detected by said detection optical system; and

a monitor which observes foreign matters/defects based on a signal processed by said arithmetic processing system;

wherein said detection optical system comprises a Fourier transform lens which Fourier transforms diffracted light coming from said circuit pattern of said object, and an inverse Fourier transform lens which inverse Fourier transforms light coming through said spatial filter.

8. The inspection apparatus according to claim 7, further comprising:

a cartridge equipped with a plurality of substrates for forming said spatial filter;

a cleaner which cleans said substrates of said cartridge; and

a printer which prints the Fourier transformed image onto the substrates of said cartridge.

9. The inspection apparatus according to claim 7, wherein, if said circuit patterns existed on the object are included a plurality of different kind circuit patterns, spatial filter appropriate for each kind circuit pattern and spatial filter appropriate for a combination of some of said kind circuit patterns are provided so as to inspect a foreign matter/defect on the plurality of the different kind circuit patterns.

10. The inspection apparatus according to claim 4, wherein said printer is a dot printer, wherein  $D \leq P$  where  $D$  is dot size and  $P$  is print pitch, and wherein interpolation is provided for gap between dots.

11. The inspection apparatus according to claim 8, wherein said printer is a dot printer, wherein  $D \leq P$  where  $D$  is dot size and  $P$  is print pitch, and wherein interpolation is provided for gap between dots.

12. The inspection apparatus according to claim 10, wherein  $D \leq 1/50 \times \phi$  if a diameter of Fourier transform plane within a circuit pattern of said object is  $\phi$ .

13. The inspection apparatus according to claim 11, wherein  $D \leq 1/50 \times \phi$  if a diameter of Fourier transform plane within a circuit pattern of said object is  $\phi$ .

14. An inspection method, comprising the steps of:  
illuminating light on an object under inspection;  
detecting light reflected from said object and  
converting the detected light into an image signal by a  
detection optical system;

selectively shielding diffracted light coming from  
a circuit pattern existed on the object in the detection  
optical system;

arithmetically processing the image signal detected  
by said detection optical system; and

observing foreign matters/defects based on a signal  
derived from said arithmetic processing by a monitor.

15. The inspection method according to claim 14,  
wherein further comprising setting step for setting a  
plurality of recipes, which differ in intensity of the  
light to be illuminated on said object, polarized light of  
illumination light, illumination angle of illumination  
light, detection visual field size, or detection polarized  
light setting, and wherein said observing step causes said  
monitor to display foreign matter and defects on an  
individual recipe basis.

16. The inspection method according to claim 14, wherein said observing step includes assigning step for assigning detection number IDs in accordance with foreign matter/defect position and displaying step for displaying size of the foreign matter/defect assigned said IDs and category indicating a manufacturing process where the foreign matter/defect assigned said IDs is occurred.

17. The inspection method according to claim 15, wherein said observing step includes displaying step for displaying foreign matter/defect which is observed by the recipe set by setting step and emphasis indication of the foreign matter/defect to which its attention is paid.